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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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November 3, 1997

Ms. Carol Sohn
Safety Division Director
U.S. Department of Energy
P.O. Box 550
Richland, WA 99352

Dear Ms. Sohn:

Re: Ecology Comments on Draft Lessons Learned Document

Enclosed is a copy of the Washington State Department of Ecology's (Ecology) formal comments on the draft document "Lessons Learned From Issues Related to *Hanford Federal Facility Agreement and Consent Order* Milestone M-40-07". Ecology transmitted these comments electronically to the U.S. Department of Energy (USDOE) on October 10, 1997.

Ecology is disappointed with the lack of objectivity demonstrated by this report. Ecology believes that future lessons learned efforts should be conducted by parties who are both objective and familiar with the technical aspects of the situation. In order for a lessons learned document to have validity and impact, any question of bias must be removed.

Ecology is looking forward to working with the USDOE to resolve the issues detailed in our comments prior to the issuance of a final "Lessons Learned" document. If you have any questions, please contact me at (509) 736-3018.

Sincerely,

Dr. Alex Stone, TWRS Safety Project Manager
Nuclear Waste Program

AS:ch
Enclosure



Ms. Sohn
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cc: Stan Branch, USDOE
Carolyn Haass, USDOE
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Oliver Wang, Ecology

October 9, 1997

Ecology Comments on
"Lessons Learned From Issues Related to *Hanford Federal Facility Agreement and*
Consent Order Milestone M-40-07"

1.	Section 1: Introduction 2 nd paragraph Page 1	<p>The comment is made 'Two primary issues exist with Tank C-103: the potential for a fire in the floating organic solvent layer, and the existence of noxious and potentially hazardous vapors that have periodically emanated from the tank vent.'</p> <p>Ecology has several comments on that statement:</p> <ul style="list-style-type: none">• There is no indication that the vapors are solely from the "tank vent". It is well acknowledged among the technical experts that the vent pathways from old tanks such as C-103 are unknown. Therefore to state the tank vent is the only pathway is misleading.• There are several other issues associated with this tank which are not mentioned. The state is also concerned that 1) the organic material in C-103 is managed in accordance with applicable state and federal laws, 2) that activities associated with the tank do not produce conditions which either increase gaseous emissions, release waste into the environment or produce a waste form which precludes or further inhibits the cost effective retrieval and disposal of the waste. DOE external technical experts have also stated some of these concerns and DOE has failed to address these issues. <p>This comment needs to be rewritten to reflect the points raised above.</p>
2.	Section 1: Introduction 2 nd paragraph Page 1	<p>The statement is made 'The installation and successful completion of the acceptance test procedure for the vapor mixing system resulted in the completion of the TPA milestone associated with noxious vapors on June 30, 1995.'</p> <p>This statement is incorrect. Although the milestone to which this statement refers is not included, it is directly contrary to the language of M-40-07, the TPA milestone associated with the vapor treatment system (VTS). M-40-07 states:</p> <p><u>'Provide a report documenting operational test procedure results and commence permitted operation of a vapor treatment system for tank 241-C-103. . .'</u></p> <p>It is clear DOE did not meet these conditions. DOE did not complete the operational testing procedure as is noted on page 4 of this document</p>

		<p>‘Operational testing was initiated on July 26, 1997, but was abandoned due to improper system performance’.</p> <p>This fact is further supported by the wording in DOE’s letter of June 30, 1997 which indicates ‘. . . completion of the acceptance test procedure . . .’ which was used to justify meeting the requirements of M-40-07.</p> <p>DOE of its own admission did not complete the operational testing procedure as required by M-40-07. Therefore, it is incorrect for DOE to state the TPA M-40-07 conditions have been met. This document cannot make statements that are unsupported by facts. This section must be rewritten to represent the facts and must reference documents such as the TPA and DOE letters.</p>
3.	Section 1: Introduction 2 nd paragraph Page 1	<p>The statement is made that all concerns associated with disposal of the floating organic layer in C-103 were dismissed when M-40-04 was ‘deleted’. As stated in Ecology’s letter of July 6, 1995, Ecology clearly informed DOE it was pursuing these issues in lieu of formal dispute resolution. The report ignores the agreement reached between Ecology and DOE concerning use of the Chemical Reaction Sub-TAP (CRS) to resolve this dispute. The report ignores the CRS’ recommendations. Similarly the report ignores the agreements made between Ecology and DOE that DOE has not fulfilled. The report ignores Project Manager Meeting discussions between DOE and Ecology on this matter culminating in submittal of our concerns at a January 1997 PMM. This statement is incorrect. This section must be rewritten to represent the facts of the case and must include references and quotes to support its statements.</p>
4.	Section 1: Introduction 2 nd paragraph last sentence Page 1	<p>While it is accurate to state that ‘. . . concerns still exist with Ecology . . .’, the sentence implies no such concerns exist with any other entity and/or organization. The statement is misleading as reflected by employee concerns and the review comments made prior to notification from DOE that M-40-07 had been met. The statement is incomplete and does not reflect the full range of individuals who expressed concerns with this system. This section must be rewritten to better represent the full complement of concerns raised by a wide range of individuals associated with this issue.</p>
5.	Section 1: Introduction 2 nd paragraph Page 1	<p>The final sentence states ‘Despite disposition of related TPA Milestones and associated safety issues, concerns still exist within Ecology which pertain to the floating organic layer and to the vapor mixing system. As Ecology’s letter of March 1997 clearly states, TPA Milestone M-40-07 has not been finalized. Ecology has declared this milestone as missed. In addition, this statement ignores</p>

		all the points raised in the previous bullet where Ecology attempted to work with DOE to resolve issues related to both M-40-04 and M-40-07. It was DOE's inability to meet its agreements and to work cooperatively with Ecology that forced Ecology to declare M-40-07 as missed. Therefore, this sentence is misleading and incorrect and must be deleted.
6.	Section 2.1 Noxious and Hazardous Vapors Page 2	<p>This section is incomplete. It fails to indicate the intent of TPA milestone and the vapor treatment system (VTS) was to relieve DOE of the expense and workers of the difficulty of using respiratory protection in the vicinity of C-103. For clarification, M-40-07 clearly states:</p> <p>'Operation of this vapor treatment system is anticipated to provide relief from worker restrictions at tank 241-C-103 in regard to noxious vapor emissions . . .'</p> <p>Monitoring of the conditions in the C-farm was to continue after the operation of the vapor treatment system to determine the success of the VTS. DOE and Ecology were to discuss the options after the monitoring data was provided. DOE's M-40-07 letter dated June 30, 1995 supports this statement:</p> <p>'Additional testing will be completed during the next several months. Testing during this period will establish the system's ability to maintain noxious and potentially hazardous vapors released from the tank to within acceptable worker exposure limits. Operating restrictions, including use of supplied air breathing apparatus will continue in C Farm until the results of the testing are evaluated.'</p> <p>This information is not included in this section nor is an adequate history of the historical development of this issue provided.</p> <p>M-40-07 did include the option to alter the VTS based on monitoring data prior to its June 30, 1997 operation date. DOE was to provide an engineering evaluation of alternatives for dealing with the vapor issues associated with C-103 which would</p> <p>' . . . document the need and options for treatment of potentially hazardous/toxic vapors being discharged from the tank 241-C-103. All pertinent characterization data will be considered including: meteorological, area, source, personal monitoring, aqueous/organic layer analysis, vapor characterization, estimates of the vapor characterization after removal of the organic layer, and the schedule for this removal. Once selected, design,</p>

		<p>procurement, and permitting will be initiated.'</p> <p>Therefore all appropriate data must have been provided prior to the installation and operation of a VTS. All the data provided to Ecology at the time of this decision indicated only a dilution system was necessary. Subsequent data provided by DOE has questioned the validity of this original decision and indicated the original design of the VTS that included charcoal filters to remove vapors was actually the optimal design. The subsequent data does not relieve DOE of the need to fulfill this TPA requirement only indicates a design change is necessary. The report must include the information provided above including references and appropriate quotations. It may be appropriate to introduce a new section that clearly defines the requirements of M-40-07 to eliminate any confusion. It should be noted that all of the above information was provided to the author during an interview conducted with Ecology representatives. This information is not reflected in this report.</p>
7.	<p>Section 2.1 Noxious and Hazardous Vapors Page 2</p>	<p>The statement is made 'The noxious and potentially hazardous vapors that occasionally have emanated from Tank C-103 needed mitigation in order to reduce the risk of exposure to Tank Farms workers.' This statement is inaccurate. The use of past tense assumes there no longer exists to mitigate the tank to protect workers. As demonstrated by the PNNL risk assessment study, the need still exists for mitigation of the conditions surrounding C-103. The PNNL Report (Health Risk Assessment for Short- and Long-term Worker Inhalation Exposure to Vapor-phase Chemicals from the Single-shell Tank 241-C-103) indicates serious worker health and safety concerns should the VTS be allowed to operate. This information is contrary to data provided to Ecology during the selection of the VTS as the preferred treatment method to meet TPA Milestone M-40-07. This report does indicate that the original decision for removing the carbon filtering system from the VTS was perhaps in error and that addition of a charcoal filtering apparatus to the VTS may be appropriate. In addition, the report does not address the potential safety concerns with current, continuous emissions of these chemicals during normal tank breathing. The reports clearly shows that potential health risks associated with tank C-103 exist and these health risks need to be better quantified and addressed. It is also important to note that the risk assessment completed by PNNL would have been appropriate before the selection of the VTS to meet M-40-07.</p> <p>Furthermore, a very important fact is ignored concerning the periodicity of the complaints that have been noted at C-103. During discussions with DOE, it has been made clear that DOE has no</p>

		<p>continuous monitoring results that provide insight into the issue of periodicity of the worker complaints. Ecology has noted that the very fact the complaints are periodic may indicate the floating organic layer may be acting as a barrier to gas release similar to the mechanism experienced in the tanks by flammable gas. With continuous monitoring data to either support or refute this hypothesis, a very serious need for mitigation still exists.</p> <p>Finally, it is important to note that emissions from this tank do not occur 'occasionally'. Tank C-103 is a passively ventilated tank and as such breathes. Many single shell tanks have been observed to breathe on a particular pattern. It is important that this section recognizes and describes the breathing mechanism that occurs at C-103. The section should also incorporate the fact that, in addition to possible episodic events, tank C-103 breathes which may have additional health impacts. Due to the lack of continuous monitoring data, the effects of these emissions are not understood.</p> <p>Therefore this sentence needs to be rewritten to reflect the points raised above.</p>
8.	Section 2.1.1 Vapor Treatment System 1 st paragraph Page 2	<p>The comment is made that the VTS was to '... render the vicinity of the tank safe for workers without the use of supplied air.' As stated in the TPA M-40-07, the VTS was to</p> <p>'... provide relief from worker restrictions at tank 241-C-103 in regard to noxious vapor emissions ...'</p> <p>The VTS was not limited to supplied air but the removal of all worker controls associated with noxious vapors in the vicinity of C-103. The reference solely to the use of supplied air is inaccurate, incomplete and misleading.</p>
9.	Section 2.1.1 Vapor Treatment System 1 st paragraph Page 2	<p>The statement is made that '... the TPA is silent about how long the system must operate in order to receive credit for completing the milestone, RL defined operability as completion of the acceptance test procedure.' As stated in comment 2, M-40-07 definitively states the requirement to provide</p> <p>'... a report documenting operational test procedure results and commence permitted operation of a vapor treatment system for tank 241-C-103 ...'</p> <p>As clearly stated in this lessons learned document (see comment 2) and in Project Manager Meeting Minutes, DOE failed to complete the operational testing procedures as required by M-40-07 and therefore</p>

		<p>failed to operate the system. As clearly stated in DOE's letter of June 30, 1995, DOE would provide monitoring results which would</p> <p>' . . . establish the system's ability to maintain noxious and potentially hazardous vapors released from the tank to within acceptable worker exposure limits.'</p> <p>As DOE failed to operate the VTS, none of these requirements were met. If this data had been obtained, Ecology would have expected DOE to discuss the issue and determine an appropriate response. Therefore RL's definition of operability does not meet the requirements clearly established within M-40-07 and does not satisfy the commitments made in its communication of June 30, 1995. Therefore any inclusion of RL's determination of operability is unsupported by the facts, is misleading and biased.</p>
10.	<p>Section 2.1.1 Vapor Treatment System 1st paragraph Page 2</p>	<p>Although the document "Engineering Evaluation of Alternatives (EEA) for Treatment of Tank 241-C-103 Vapor Space" (WHC-SD-WM-ES-281) is referenced, this paper describes the purpose of the VTS as being ' . . . to mitigate the chemical. . without the use of supplied fresh air. In actuality, the EEA states in the section 'Statement of the Problem' that "The objective of this evaluation is to identify alternatives to mitigate worker exposure to fugitive emissions from tanks C-101, C-102 and C-103 and recommend preferred alternatives.' This objective is in agreement with the requirements of M-40-07 which were ' . . . to provide relief from worker restrictions at tank 241-C-103 in regard to noxious vapor emissions. . . '. Although the EEA does mention that current conditions at C-103 required supplied air, Ecology could not determine any information in the EEA that stated elimination of supplied air was its primary objective. If the author has any information to the contrary, it needs to be referenced and quoted. Furthermore, the EEA states in Section 2.0: Need for Action that ' . . . the no action alternative is not desirable.' The no action alternative is the path currently supported by DOE and is contrary to information in the EEA and must be noted in this report. This section needs to be rewritten to better represent the facts associated with the issue. This information must include the appropriate references and quotations.</p>
11.	<p>Section 2.1.1 Vapor Treatment System 1st paragraph Page 2</p>	<p>Due to the insertion of the statement identifying RL's definition of 'operability', it is necessary that the definition of 'acceptance test procedures' and 'operating test procedures' as defined by DOE Orders and Requirements be inserted in this document. In addition, a description of the process by which such systems are designed, tested and ultimately operated must be inserted in this section. There are clear differences between 'acceptance test procedures' and 'operation</p>

		test procedures' which would further support Ecology's determination that the requirements of M-40-07 (operation test procedures and an operating VTS) are not fulfilled by the acceptance test procedures provided by DOE. This information is lacking from this report and must be included along with the appropriate references and quotes.
12.	Section 2.1.1 Vapor Treatment System 2 nd paragraph Page 2	<p>This paragraph fails to include a number of very important details and misleads the reader with a biased presentation of the facts. This section ignores:</p> <ul style="list-style-type: none"> • the fact that none of the technical concerns associated with the VTS were communicated to Ecology, • the fact that RL only produced the technical concerns as represented by the Review Comment Responses (RCRs) when the issue was made known by an internal whistleblower, • the fact that the concerns involved not just air permitting issues but also included technical concerns about the ability of the system to operate at all, • the fact some very important technical concerns associated with the air permit were withheld from Ecology. For example, the RCRs raised concerns associated with the plugging of the HEPA filters. This concern was withheld from Ecology although the possibility would have an important impact on the issuance of the air permit. In addition, the concern was subsequently proven to be true., • the fact that Ecology has repeatedly stated a position that withholding these technical concerns particularly as it is associated with the issuance of an air permit violate state and federal laws, • the fact that at least one of the RCRs indicated the VTS would not only fail to resolve the issue of noxious gases at C-103 but would make the problem worse, • the fact that DOE failed to address these concerns. RL can provide no proof that its own system to resolve technical concerns raised in the RCR comments was followed and cannot; provide any documentation that the technical concerns were addressed, • the fact that some of the people involved at DOE feel they were pressured into ignoring their technical concerns in favor of meeting a TPA milestone although there were serious technical and worker health and safety concerns involved, • the fact that RL decided it was more important to meet a TPA milestone than it was to address safety and operational concerns associated with its actions, • the fact that the RCRs associated with the operation of the VTS subsequently proved to be correct and the system failed to

		<p>complete its operational testing procedures,</p> <ul style="list-style-type: none"> • the fact that at the Unit Manager Meeting 2 weeks prior to this milestone completion date, Ecology indicated it would be willing to provide DOE with more time to resolve its air permitting problems and recommended that if more time was need, DOE communicate with Ecology as soon as possible, • the fact that in a meeting just 2 weeks before the milestone completion date, DOE failed to communicate to Ecology any of the technical concerns raised in the RCRs, and • the fact that DOE maintained expensive controls in and around C-103 although the intention of the VTS was to remove worker restriction associated with noxious gas emissions around the tank. <p>In Ecology's opinion, the failure of this document to identify and address the points raised above indicates an extreme bias in the document. It should be noted all of these items were discussed with the author during an interview with Ecology but they were not included in the report. Therefore the objectivity of this report is significantly damaged. This section must be rewritten to realistically represent the facts of the case.</p>
13.	<p>Section 2.1.1 Vapor Treatment System 4th paragraph Page 3</p>	<p>As stated in the comments 2 and 9, RL's determination of operability is contrary to the definition required by M-40-07. Therefore it is misleading and inaccurate to indicate RL's determination as supported by fact. In addition, the paragraph continues with a description of the '... caveat that "additional testing" would be conducted during the months following completion of the TPA milestone ...'. This document fails to indicate that the "additional testing" referred to in this sentence was to indicate whether the system would meet the requirements of M-40-07 by providing '... relief from worker restrictions at tank 241-C-103 ...'. Failure to provide this proof is further indication M-40-07 was not met as worker restrictions associated with noxious emissions continue around tank C-103 to this day. Therefore the report must correct and/or explain the meaning of the terms 'additional testing' as described above.</p>
14.	<p>Section 2.1.1 Vapor Treatment System 4th paragraph Pages 3 and 4</p>	<p>The paragraph ends with the statement 'The system has been inoperative since early November 1995.' This statement along with the operational history of the VTS provided in earlier portions of this paragraph is incomplete. It must include the information that the VTS operated for only very limited periods from Jun 30, 1995 until abandoned early in November 1995. In addition, it should be noted the total number of hours the system operated during this period (Ecology has been informed by DOE that the system operated for approximately a total of 72 hours or 3 days out of this 3 month</p>

		<p>period. Ecology, however, does not have written verification of that number.) It is important to indicate the seriousness of the design flaws within the VTS system and the amount of money that would have been saved if DOE had heeded the technical comments raised in the RCRs. Update this section to provide a complete and accurate summary of the operational history of the VTS. Include all appropriate quotes and references.</p>
15.	<p>Section 2.1.1 Vapor Treatment System 1st paragraph Page 4</p>	<p>This paragraph begins with the statement that ‘On March 25, 1997, nearly two years after TPA milestone M-40-07 was submitted to Ecology as completed, Ecology informed RL of its determination that TPA milestone M-40-07 had not been met.’ This statement is incorrect and misleading. It ignores several attempts made by Ecology during Unit and Project Manager Meetings to have DOE substantiate its actions concerning the VTS at C-103. It ignores Ecology communicating to DOE that the issue of the VTS could not just be ignored and that it was not a decision that DOE could make on its own. It ignores attempts made by Ecology to work with DOE to resolve this issue without the need of issuing the formal declaration referenced above. DOE failed during these meetings to provide</p> <ul style="list-style-type: none"> • adequate justification for its actions, • an indication of when the operation of the VTS system would begin, and • an indication of a willingness to work with Ecology to resolve this issue <p>Finally, this sentence could be interpreted to imply to the reader that DOE had no indication Ecology’s March 25, 1997 letter was going to be issued despite the repeated attempts by Ecology to resolve this issue. It does not represent the facts of the issue and does not indicate the unwillingness on the part of DOE to work with Ecology to address this issue. This section needs to be rewritten to better represent the issues associated with the VTS.</p>
16.	<p>Section 2.1.2 Monitoring Efforts Page 4</p>	<p>This whole section is misleading and incomplete. It fails to make the points that:</p> <ul style="list-style-type: none"> • most of this monitoring data was collected after the VTS failed and therefore cannot be used to justify actions by DOE at the time the VTS was implemented and failed to operate as required by M-40-07. DOE cannot use data collected subsequent to the TPA milestone completion data to justify its actions at the time the milestone was due, • correlate the information to when the data was collected. In particular, the report should identify when the data was collected in relation to pre/post VTS installation and testing. • this data does not justify the failure of DOE to address the

		<p>technical and safety concerns in the RCRs at the time the VTS was installed and DOE declared the TPA milestone met,</p> <ul style="list-style-type: none"> • it does not meet the requirements of M-40-07. Controls associated with noxious emissions are still in place around C-103 and M-40-07 was written to eliminate these controls around C-103, • there are significant technical concerns with the quality of the headspace data obtained from C-103 (QA/QC, reproducibility, etc), and • this data was neither shared with Ecology Safety Project Manager nor provided to Ecology until Ecology sent a letter on March 25, 1997 declaring that M-40-07 had not been met. <p>In addition, this section makes no reference to the PNNL study completed on March 13, 1997 which indicates the risks associated with C-103 might be much greater than indicated. It fails to indicate that the controls placed on C-103 may not be adequate and fails to address the concerns raised in this study. As explained, the entire section is misleading and incomplete. Therefore, the section must be rewritten to represent accurately the monitoring efforts and timeframe associated with this issue.</p>
17.	Section 2.2 Organic Layer 1 st paragraph Page 5	<p>The first paragraph begins 'In 1993, a TPA milestone was established to address the facility safety and worker protection concerns identified in Section 1 above.' This statement is inaccurate. It does include the consideration that removal and disposition of the organic layer would resolve worker health and safety concerns as represented by the numerous worker complaints over the years. However, the main issue associated with M-40-04 was the removal of the organic layer to resolve safety issues associated with the potential explosion/fire cause by the organic layer and the resultant loss of containment and release of waste into the environment. This information is not represented in the above statement and provides an inaccurate representation of the hazards associated with the floating organic layer. This sentence needs to be rewritten to include all safety hazards associated with the floating organic layer. Similarly, the resolution, where applicable, of the safety hazards must be specified.</p>
18.	Section 2.2 Organic Layer 3 rd paragraph Page 5	<p>On the top of page 6, an incorrect association is made between M-40-04 and M-40-07. The information provided indicates that changes made to M-40-04 in September of 1994 lead to the creation of M-40-07. The comment is made that 'This proposal subsequently became TPA milestone M-40-07.' This is incorrect. The original M-40-04 and M-40-07 were written at the same time to deal with different aspects of the problems facing C-103. As Ecology has indicated</p>

		<p>during recent discussions on this issue and at many unit and project meetings in the past, M-40-07 was only a temporary measure until the floating organic layer was removed from C-103 as required by M-40-04. Changes to M-40-04 that occurred in September of 1994 were independent of M-40-07.</p>
19.	<p>Section 2.2 Organic Layer 2nd paragraph Page 6</p>	<p>The statement is made that ' . . . RL, Ecology, and EPA concurred . . . that the organic layer in Tank C-103 would remain in place until the tank was interim stabilized.' This statement is incorrect. It indicates Ecology had at one time approved of RL's plan to interim stabilize C-103 with the floating organic layer in place. At no time has Ecology concurred with the DOE plan to interim stabilize C-103 with the floating organic layer in place. This position is succinctly stated in Ecology's letter of July 6, 1995,</p> <p>'Though Ecology has chosen to not take this to Tri Party Agreement dispute resolution, we have, and continue to believe that management techniques which would avoid organic materials in Tank C-103 coming in contact with tank sludges (via pumping from the surface down) may be advisable. Ecology bases its belief on the following points:</p> <ul style="list-style-type: none"> • The chemical interactions of organic species with radioactive sludges are not well understood. • The little technical information provided to support DOE's preferred alternative is based upon theoretical reaction calculations, largely unvalidated assumptions, and limited laboratory test using non-radioactive simulants • Removal of C-103 organics in a manner minimizing contact with tank sludges would minimize the potential for reactions(s) and prevents any potential safety hazard from occurring. • Data from tanks 241-BY-108 and 241-BY-109 (which in the past have undergone the procedure recommended by DOE for C-103) are currently under evaluation in regard to the potential for safety hazard creation due to organic interaction with salt-cake. We don not believe that ignoring these current evaluations is appropriate.' <p>It should be noted that Ecology does not merely offer an opinion that the removal of the floating organic layer in C-103 'may be advisable.' The last sentence in this paragraph must be rewritten to include the above quote from Ecology's July 6, 1995 letter.</p> <p>In addition, Ecology has repeatedly raised the above issue with DOE and DOE has failed to address concerns raised by both Ecology and</p>

		its own technical experts. Again, the statement is disturbing at best as it reflects either a bias and/or a lack of understanding by the author of the complexities of the issues.
20.	Section 2.2 Organic Layer 3 rd paragraph Page 6	The comment is made that 'Interestingly, the Ecology Hanford Project Manager had concurred on RL's course of action only eight days earlier.' Ecology questions the documentation supporting this statement. What individual is meant by the term 'Ecology Hanford Project Manager.' If DOE refers to Roger Stanley, the statement ignores Mr. Stanley's July 6, 1995 letter to DOE on this subject. If it refers to the TWRS Safety Project Manager, this individual made it clear through repeated sessions with DOE that it does not support DOE's preferred alternative. Therefore this sentence must be rewritten as it is misleading and provides a false impression that Ecology endorsed DOE's plan for dealing with the floating organic layer in C-103. At no time has Ecology endorsed this alternative.
21.	Section 2.2 Organic Layer 3 rd paragraph Page 6	<p>The comment is made that 'Interestingly, the Ecology Hanford Project Manager had concurred on RL's course of action only eight days earlier.' This statement is false. Ecology raised its safety concerns with DOE during meetings prior to the June 30, 1995 TPA date and informed DOE that a letter would be forthcoming concerning the issues it feels DOE had not addressed. At no time did Ecology concur with the decision by DOE to interim stabilize C-103 with the floating organic layer in place. In fact, an agreement was made between Ecology, DOE-RL and DOE-HQ to rely upon the CRS to determine the best manner in which to resolve this issue as represented in a letter from Ecology on May 21, 1996.</p> <p>DOE has failed to abide by this agreement as the CRS has stated several times over the last two years it feels the best alternative to resolution of the floating organic layer is to remove the layer prior to interim stabilization. See the following comment for a direct quote from the CRS.</p>
22.	Section 2.2 Organic Layer 1 st paragraph Page 7	The statement is made following the quote from the CRS on page 7 that 'Note that the CRS found no unacceptable near-term safety concerns with interim stabilizing C-103 with the organic layer in place . . .'. This statement is correct but incomplete. As Ecology has communicated several times to DOE, Ecology is concerned that the CRS has not be asked if possible noxious vapor emissions could be generated when the organic layer comes in contact with the energetic radioactive sludge. The concern regarding the organic layer coming in contact with the sludge has been communicated to DOE as early as its July 6, 1995 letter to DOE. In addition, DOE recently stated its intent to discuss C-103 with the CRS. Ecology sent the following question on August 8, 1997 to DOE to present to Ecology during this

		<p>discussion.</p> <p>‘There is one question that the CRS has never addressed. Ecology has expressed concern over the past two years with the potential safety hazards associated with the organic material coming in contact with the radioactive sludge in C-103. As a chemist, I can envision potentially serious safety hazards arising from having organic material come in contact with an energy source (i.e. the radioactive sludge.) The formation of dangerous gaseous emissions in this instance is very possible. Therefore to interim stabilize the tank WITH the organic layer in place is more likely to cause a safety hazard than the pathway already recommended by the CRS. It would be of interest to Ecology to hear the CRS’ opinion on this matter.’</p> <p>DOE has not informed Ecology of the results of this discussion. Regardless, Ecology maintains the chemical interactions of organic species are not well understood and the possibility of noxious vapor emissions from this activity eliminates from consideration the alternative of interim stabilizing C-103 with the floating organic layer in place. DOE over the last two years has not addressed this issue.</p> <p>In addition, the CRS has repeatedly concluded the best alternative to resolve the floating organic layer in C-103 is</p> <p>‘Removal of the organic layer could be followed by saltwell pumping for interim stabilization of 103-C. In summary, we remain convinced this alternative represents a preferred path and find no reason to change our position from that given in the 13th CRS meeting summary letter;’</p> <p>DOE has repeatedly failed to follow this advice although such activities would resolve all issues associated with C-103.</p> <p>In addition, the recent PNNL risk assessment study provides more recent data on this issue and raises serious safety concerns associated with C-103 in its current configuration. It would be of interest to determine if the CRS would maintain it’s position concerning the short term safety hazards associated with the floating organic layer in C-103 given its current configuration. These issues were not mentioned and/or discussed in the report. This section needs to be updated to reflect this information.</p>
23.	Section 2.2 Organic Layer 2 nd paragraph page 7	<p>The paragraph begins with the statement that ‘In a letter to RL dated May 21, 1996 Ecology again raised concerns about interim stabilization of Tank C-103 with the organic layer in place.’ The paragraph continues with a description and explanation about a</p>

		<p>change in a draft version of the Foster Wheeler engineering study from a recommendation for removal of the organic layer before interim stabilization to its final form without a recommendation. It should be noted that Ecology has not received any of the explanations provided in this document. This is the first time some of this information has been provided to Ecology. Therefore it is important to note that this explanation was not provided prior to this document.</p> <p>In addition, one very important concern raised in Ecology's May 21, 1996 letter was not addressed in this section. The letter provides information on an agreement reached in September of 1995 between DOE-RL, DOE-HQ and Ecology concerning disposition of the floating organic layer. The three parties agreed to have an engineering study of alternatives done (the Foster Wheeler study), bring this study to the CRS for their review and comment and to follow the recommendations provided by the CRS. The CRS reviewed this document and stated:</p> <p>'Removal of the organic layer could be followed by saltwell pumping for interim stabilization of 103-C. In summary, we remain convinced this alternative represents a preferred path and find no reason to change our position from that given in the 13th CRS meeting summary letter;'</p> <p>DOE has failed to live up to this agreement and continues to proceed with its intention of interim stabilizing C-103 with the organic layer in place. Clearly, DOE has demonstrated an unwillingness either to work cooperatively with Ecology or to honor agreements made with Ecology. None of this information was mentioned in the report.</p>
24.	Section 2.3 Summary Page 8	<p>The statement is made that 'The TPA milestones associated with the vapor treatment system and the floating organic layer were either completed or deleted in 1995.' This statement is incorrect and unsupported by the administrative requirements/mechanics imposed by the TPA (i.e. Ecology is currently in dispute resolution due to its determination that M-40-07 has not been met.) Again M-40-07 states that submittal of completion of the operational testing procedures and the permitting of an operating facility are necessary to complete M-40-07. DOE of its own admission has failed to complete the operational testing procedures on the VTS and therefore cannot, by definition, substantiate its claim that M-40-07 has been met.</p> <p>The following statement begins 'Since then, Ecology has identified concerns with each issue and has voiced these concerns to RL.' This statement is inaccurate, incomplete and misleading. It ignores</p> <ul style="list-style-type: none"> • the numerous attempts by Ecology during the Project Manager

		<p>Meetings during the year or more preceding its March 1997 letter to work cooperatively with DOE to resolve the issue of the VTS,</p> <ul style="list-style-type: none"> • the information provided by Ecology in its July 6, 1995 letter which was communicated to DOE prior to the completion date for M-40-04, • the agreement reached in September 1995 between DOE-RL, DOE-HQ and Ecology to resolve disposition of the organic floating layer in C-103, and • the failure of DOE to act upon recommendations provided by its own outside panel of technical experts. <p>In addition, the summary fails to mention:</p> <ul style="list-style-type: none"> • the activities of DOE which lead it to meet a TPA milestone without adequately addressing technical concerns raised in the RCRs prior to the milestone completion date, • the lack of documentation which would indicate the proper procedure was followed to resolve the concerns raised in the RCRs, • the reasons why DOE would place meeting a TPA milestone over serious worker health and safety concerns, • the failure of DOE to follow its own procedures concerning the resolution of technical concerns (i.e. the review comment response procedure), and • the failure of DOE to communicate technical concerns to Ecology
25.	3.1 Drafting TPA Milestone Language pages 8 & 9	<p>Ecology does not see the relevance of this recommendation to the discussion that proceeded. Ecology agrees that there may be some TPA milestones for which the language is not clearly defined. This, however, is not one of those instances. The language of M-40-07 in particular is very clear. It included the following requirements:</p> <ul style="list-style-type: none"> • the results of the operational testing procedures, • the operation of a permitted vapor treatment system, and • the elimination of worker controls associated with noxious vapors in the vicinity of C-103. The intent of the milestone was very clear ‘Operation of this vapor treatment system is anticipated to provide relief from worker restrictions at tank 241-C-103 in regard to noxious vapor emissions. . .’ <p>In Ecology’s opinion, the objective of this milestone was very clear and the requirements to be fulfilled are well identified. DOE of its own admission did not complete the operational testing procedures and subsequently could not operate a permitted vapor treatment system. In addition, worker controls associated with the noxious emissions have been and continue to be in place around C-103. Therefore DOE of its own admission has not met M-40-07.</p>

		Ecology rejects this recommendation as it is inappropriate and unsupported by the facts of the case.
26.	3.2 Some Activities are Overcome by Events pages 9	<p>This section recommends that a mechanism be developed which allows the signatories of the TPA to reach agreement when an activity is no longer needed. Ecology does not see the relevance of this recommendation to the previous discussion. The point of the discussion is to analyze the activities that lead to the problems that face Ecology and DOE concerning C-103. Ecology believes that the current framework of the TPA allows for such an agreement. If DOE had been able to operate the VTS as required by M-40-07 and subsequently found that the system either did not provide the necessary function or was actually detrimental to either worker health and safety or the environment, the issue could have been discussed during the Project Manager Meetings. As stated earlier, Ecology attempted to discuss the VTS during the Project Manager Meetings more than a year prior to its March 1997 letter and received no cooperation from DOE. In addition, if the technical concerns raised about the VTS had been shared with Ecology prior to the TPA milestone, Ecology was willing to give DOE more time if needed. Therefore Ecology does not see the need for any additional mechanism. This does not address the problems that forced Ecology to send its March 1997 letter and therefore has no relevance to this issue.</p> <p>Ecology rejects this recommendation as it is inappropriate and does not address problems associated with the case.</p>
27.	3.4 Open Lines of Communication pages 10 & 11	<p>Although Ecology agrees with the overall recommendation, it feels obligated to reiterate that it has attempted to keep lines of communication open with DOE but has met continued resistance and avoidance. On the VTS for example, DOE failed to communicate technical concerns with the system to Ecology. Upon learning the system failed, Ecology attempted repeatedly to communicate with DOE during the Project Manager Meetings with no success. The lack of response from DOE on this issue is in Ecology's opinion a direct result of its failure to discuss openly these issues with Ecology and reach an agreement.</p> <p>On the issue of the disposition of the floating organic layer, Ecology has repeatedly attempted to work with DOE to resolve this issue. Ecology's letter of July 6, 1995 was a clear attempt to work with DOE on this issue rather than invoking the dispute resolution clause of the TPA. In addition, Ecology entered in an agreement with DOE-RL, DOE-HQ to follow the advise of the CRS in determining the best way to handle the disposition of the floating organic layer in C-103.</p>

		DOE made the agreement and unfortunately continues to fail to live up to it. Therefore Ecology expects not only these lessons learned to be implemented but it also expects the issue of disposition of the floating organic layer in C-103 to be resolved in the near future. Otherwise Ecology will have no option but to question DOE's willingness to implement the lessons learned.
28.	3.5 Sharing of Technical Concerns	<p>Ecology feels that an important lesson learned that must be identified is the sharing of technical concerns immediately upon identification. For example, concerns should be shared which affect:</p> <ul style="list-style-type: none"> • The technical viability of a proposed action • Potential impacts on worker health and safety • Impacts upon the ultimate mission at Hanford, i.e. treatment and disposal of the waste stored in the underground tanks • Data which is important to fulfill regulatory requirement <p>The problems faced with dealing with the floating organic layer in C-103 can be directly tied to the withholding of vital information as represented by the RCRs. Ecology only obtained this information after a whistleblower initiated a review. Withholding of technical concerns will only increase the likelihood of such problems occurring again in the future.</p>
29.	3.6 Living Up to Commitments	Another lesson learned is related to a requirement on the part of DOE to live up to the commitments it has made. In issues related to both M-40-04 and M-40-07 Ecology repeatedly attempted to work cooperatively with DOE to resolve serious safety and disposal problems. Paths forward were agreed to and decisions made that Ecology had hoped would prevent us from reaching the point at which we now find ourselves. DOE, however, continues to refuse to meet its commitments.
30.	3.7 Following the Advice of Outside Technical Experts	Another lesson learned is related to DOE's failure to follow the advice of its own technical experts. The CRS has repeatedly stated the most technically defensible manner in which to resolve all issues associated with the floating organic layer in C-103 is to remove the organics before interim stabilizing the tank. DOE continues to refuse to follow the advice of this panel although such activities would resolve all contentions between DOE and Ecology. DOE must learn to follow the advice of outside technical experts in resolving these major safety and disposal issues.

31.	3.8 Resolution of Technical Issues	A further lesson learned is related to the resolution of technical concerns. DOE should commit to implementing its own procedures and orders concerning the appropriate manner in which to resolve technical issues raised both internally and externally (for example, the appropriate resolution of issues represented in the RCRs.) In addition, DOE should commit to placing its highest priority on resolving technical concerns associated with impacts to worker health and safety and the environment.
32.	3.9 Requesting Technical Concerns	A further lesson learned is related to Ecology's obtaining review comments associated with the various TPA related activities at Hanford. Ecology should recognize that technical evaluations have and will continue to occur. Therefore Ecology should make it a point of requesting this type of information to include in its evaluation of TPA and/or permitting related activities at Hanford. Such a formal request prior to making a decision will prevent the re-occurrence of difficulties in the future.
33.	Root Cause Analysis Chart for Milestone M-40-07 Page 12	Ecology was unable to determine where this chart was mentioned, explained or otherwise referred to throughout the document. In addition, Ecology questions what facts were used to support the conclusions reached in each box and specifically questions what criteria were used to determine what boxes were labeled 'LTA' or 'Less Than Adequate'. This chart needs to be explained in complete detail. The data used for each box must be represented and substantiated. In addition, it must be clearly explained on what basis these conclusions were reached and how this information is to be used. In addition, if such a chart is used, it should reflect a chronological order in which the events occurred. As such, dates and/or timeframes during which the actions took place should be reflected on the chart. Ecology questions the validity of some of the comments within the boxes and looks forward to a detailed explanation of its generation.
34.	General:	The report suffers from a clear indication of the source of material used for the conclusions and comments throughout the document. Ecology requests the following be included in the report: <ul style="list-style-type: none"> • an identification of all persons interviewed for this report, • an identification of all documents received for this report, and an identification, by name, of individuals who provided a peer review of this document.

35.	General:	Given the number of comments Ecology has generated and the concern it has with the quality of this document, Ecology will need to review the next version for additional comments.
36.	General:	Ecology has learned from its review of this document that future lessons learned efforts should be conducted by parties separate from the Hanford community and the organizations involved. In addition, it would be preferable if an individual and/or organization can be found which fulfills the previous requirement <u>and</u> is familiar with the technical aspects of the situation. In order for a lessons learned document to have validity and impact, any question of bias must be removed.